

CLAIMS

1. A circuit, comprising:

an input to receive a supply voltage, the supply voltage having a normal polarity and an inverted polarity;

5 an output to drive a load, the load being connected between the output and a ground;

a logic component, connected between the input and the output, to electrically couple the load to the supply voltage when the supply voltage has the normal polarity; and

a protection component, connected between the input and the ground, to prevent a first current from flowing in the circuit when the supply voltage has the inverted polarity, and to  
10 allow a second current to flow in the circuit if the supply voltage is disconnected from the input.

2. The circuit of claim 1, wherein the protection component prevents the first current from flowing between the supply voltage and the ground when the supply voltage has the  
15 inverted polarity.

3. The circuit of claim 1, wherein:  
the load is an inductive load; and  
the second current flows between the load and the ground through the protection  
20 component when the supply voltage is disconnected.

4. The circuit of claim 1, wherein the protection component is a thyristor.

5. The circuit of claim 4, wherein the thyristor is reverse biased when the supply  
25 voltage has the normal polarity.

6. The circuit of claim 4, wherein the thyristor is forward biased but not conducting when the supply voltage has the inverted polarity.

30 7. The circuit of claim 4, wherein:  
the thyristor has a forward breakdown voltage; and

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the forward breakdown voltage is greater than the supply voltage having the inverted polarity.

8. The circuit of claim 4, wherein the protective component further includes a resistor connected between the ground and the thyristor.

9. The circuit of claim 8, wherein a break-over current flowing through the resistor causes the second current to flow through the thyristor.

10. The circuit of claim 9, wherein the break-over current is adjustable.

11. The circuit of claim 10, wherein:  
the thyristor has a breakdown voltage; and  
the breakdown voltage is greater than the supply voltage having the inverted polarity.

12. The circuit of claim 11, wherein the break-over current is adjusted based on the breakdown voltage.

13. A method of protecting a circuit which electrically couples a supply voltage to a load, comprising steps of:

preventing a first current to flow in the circuit between the supply voltage and the load when the supply voltage has an inverted polarity; and

allowing a second current to flow in the circuit between the load and a ground if the supply voltage is disconnected from the circuit.

14. The method of claim 13, wherein the step of preventing a first current to flow includes a step of preventing a first current to flow in the circuit between the supply voltage and the ground when the supply voltage has an inverted polarity.

15. The method of claim 13, wherein the step of preventing a first current to flow includes a step of selecting a breakdown voltage for a protection component in the circuit, the breakdown voltage being greater than the supply voltage having the inverted polarity.

5 16. The method of claim 14, wherein the step of allowing a second current to flow includes a step of selecting a trigger current for the protection component based on the breakdown voltage.

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